Multiple Choice Questions – 2

All questions carry 1 mark

51. Khachiyan's ellipsoid algorithm is a
    a. simplex method
    b. non-simplex method
    c. gradient search method
    d. none of these
52. Karmarkar's interior point method is
    a. simplex method
    b. gradient search method
    c. a non-simplex method
    d. none of these
53. Kuhn-Tucker conditions are used
    a. to identify the optimum point for problems with inequality constraints
    b. to identify the optimum point for a LPP problem
    c. to identify the optimum point for unconstrained optimization problem
    d. to identify the optimum point for discrete optimization problem
54. Find the point which optimize the function $2x^2 + 5x_1x_2$, subject to $x_1 + x_2 \leq 3$
    a. [2.5, 0.5]
    b. [2,1]
    c. [3,0]
    d. [0,3]
55. Logarithmic barrier method is used to solve
    a. unconstrained optimization problem
    b. constrained optimization problem
    c. discrete optimization problem
    d. multiobjective optimization problem
56. Find the minimum of the function $3x^2 - 2x + 5$, subject to $x \geq 4$
    a. 0
    b. 60
    c. 50
    d. 45

57. Dynamic programming can handle
    a. discrete variables
    b. non-convex functions
    c. non-differentiable functions
    d. all of the above
58. Dynamic programming requires
    a. separability of the objective function
    b. monotonicity of the objective function
    c. both (a) and (b)
    d. neither (a) nor (b)
59. Generalized Bender Decomposition method is used for
    a. linear programming
    b. multiobjective optimization
    c. stochastic programming
    d. mixed integer nonlinear programming
60. In GBD method upper bound and lower bound are found from
    a. primal problem and master problem
    b. lower problem and higher problem
    c. primary problem and secondary problem
    d. slave problem and master problem
61. Calculating the optimum number of tray for distillation column is
    a. linear programming problem
    b. mixed integer nonlinear programming
    c. integer programming
    d. binary programming
62. When the optimization problem depends on random and probabilistic quantities then it is called
    a. Linear programming
    b. dynamic programming
    c. integer programming
    d. stochastic programming
63. In thermal power plant, probabilistic quantity is
    a. availability of coal
    b. composition of coal
    c. demand of power
    d. all of these
64. The probability $P(E)$ is given by .....where m is the number of successful event, n is the total number of event.
    a. $P(E) = \lim_{n\to\infty} \frac{m}{n}$
    b. $P(E) = \lim_{n\to\infty} \frac{n}{m}$
    c. $P(E) = \lim_{n\to\infty} \frac{m}{n-m}$
    d. $P(E) = \lim_{n\to\infty} \frac{n-m}{n}$
65. On a multiple choice test, each question has 4 possible answers. If you make a random guess on the first question, what is the probability that you are correct?
    a. 4
    b. 1
    c. 1/4
    d. 0
66. What is the median of the following set of scores? 18, 7, 13, 10, 15 ?
    a. 7
    b. 18
    c. 13
    d. 10

67. What is the mean of the following set of scores? 18, 7, 13, 10, 15 ?
    a. 13 b. 12
    c. 12.6 d. 18
68. Multiobjective optimization is
    a. optimization of one objective function with many constraints
    b. optimization of more than one objective functions with constraint
    c. optimization of more than one objective functions without constraints
    d. both (b) and (c)
69. For a 2 objectives optimization, Pareto front is
    a. plot of f_1 vs f_1 b. plot of f_1 vs x
    c. plot of f_2 vs x d. plot of $f_1 f_2$ vs x
70. Utopia point is related to
    a. linear programming problem b. binary programming
    c. multiobjective optimization d. stochastic programming
71. Lexicographic method associated with
    a. dynamic programming problem b. multiobjective optimization
    c. binary programming d. stochastic programming
72. Multiobjective optimization can be solved by
    a. linear weighted sum method b. Utopia tracking approach
    c. lexicographic method d. all of the above
73. Choose the wrong statement
    a. in ranking method the objectives are arranged by their importance
    b. linear sum weighted method is not suitable for nonconvex MOO problem
    c. evolutionary multiobjective optimization is suitable for nonconvex MOO problem
    d. Utopia tracking approach is not suitable for nonconvex MOO problem
74. For a multiobjective optimization
    a. the unit of all objective functions should be same
    b. the unit of all objective functions may be different
    c. the unit of all objective functions may be different but with same order
    d. the unit and order of all objective functions should be same
75. During the tuning of PID controller we minimize
    a. ISE b. IAE
    c. ITAE d. all of the above
76. Online calculation of optimal set point is known as
    a. dynamic process simulation b. real time optimization
    c. online monitoring d. none of these

77. Optimization of fluidized bed is a
    a. linear programming problem
    b. binary programming problem
    c. stochastic programming problem
    d. dynamic programming
78. RTO are usually executed
    a. on monthly basis
    b. micro second basis
    c. year basis
    d. hour basis
79. Majority of the industrial MPC model rely on
    a. linear models
    b. quadratic model
    c. polynomial model
    d. zigzag model
80. Optimal control usually
    a. minimizes the error between set point and actual value
    b. only control the temperature of any process
    c. optimize the output parameters only
    d. controls the input parameters only
81. A MPC controller
    a. is linear controller
    b. uses process or plant step response model
    c. minimizes the error function
    d. easily adapted to multivariable plants
    e. all of the above
82. Dynamic Matrix Controller
    a. can not handle control problem with constraints
    b. can handle control problem with constraints
    c. can not handle nonlinear control problem
    d. can handle only one control problem
83. Model predictive control is
    a. based on predictions of future outputs over a prediction horizon
    b. used for static system only
    c. control the inlet streams only
    d. control only one output parameter
84. The input data can be validated via
    a. bound check
    b. statistical data reconciliation
    c. gross error detection
    d. all of these
85. Elitism is used in
    a. simulated annealing
    b. differential evolution
    c. particle swarm optimization
    d. genetic algorithm

86. The maximum of $f(x) = \frac{3x}{x^2 + 9}$ for $x \geq 0$ occurs at
    a. $x = -3$
    b. there is no maximum point
    c. $x = 3$
    d. $x = 0$
87. What type of topology (social network) is used for Global Best PSO?
    a. ring network
    b. star network
    c. wheel network
    d. none of these
88. What type of topology (social network) is used for Personal Best PSO?
    a. ring network
    b. star network
    c. wheel network
    d. none of these
89. ..... is a nongeometric design
    a. Box-Behnken design
    b. Central composite design
    c. Simplex design
    d. Plackett-Burman designs
90. Mutating a strain is:
    a. changing all the genes in the strain
    b. removing one gene in the strain
    c. randomly changing one gene in the strain
    d. removing the strain from the population
91. The three gene operators we have discussed can be thought of as:
    a. Crossover: Receiving the best genes from both parents
    b. Mutation: Changing one gene so that the child is almost like the parent
    c. Mirror: Changing a string of genes in the child so it is like a 'cousin' to the parent
    d. (a) and (b) only
    e. All of the above
92. If any population contains only one strain, we can introduce new strains by:
    a. using the Mutation operator
    b. injecting random strains into the population
    c. using the Crossover operator
    d. B only
    e. both (a) and (b)
93. The efficiency of a Genetic Algorithm is dependent upon
    a. the initial conditions.
    b. the types of operators employed.
    c. the size of the population.
    d. all of the above
94. In the analysis of variance procedure (ANOVA), the term "factor" refers to
    a. the dependent variable
    b. the independent variable
    c. different level of a treatment
    d. the critical value of F

95. The ANOVA procedure is a statistical approach for determining whether or not
    a. the mean of two samples are equal
    b. the mean of two or more samples are equal
    c. the mean of more than two samples are equal
    d. the mean of two or more populations are equal
96. In the ANOVA, treatment refers to
    a. experimental units
    b. different levels of a factor
    c. a factor
    d. applying antibiotic to a wound
97. The mean square is the sum of squares divided by
    a. the total number of observations
    b. its corresponding degree of freedom
    c. its corresponding degree of freedom minus one
    d. None of the above
98. An experimental design where the experimental units are randomly assigned to the treatments is known as
    a. factor block design
    b. random factor design
    c. completely randomized design
    d. none of the above
99. The number of times each experimental condition is observed in a factorial design is known as
    a. partition
    b. replication
    c. experimental condition
    d. factorization
100. In order to determine whether or not the means of two populations are equal,
    a. a *t* test must be performed
    b. an analysis of variance must be performed
    c. either a *t* test or an analysis of variance can be performed
    d. a chi-square test must be performed

Answer

51 (b)	52 (c)	53 (a)	54 (a)	55 (b)	56 (d)	57 (d)	58 (c)
59 (d)	60 (a)	61 (b)	62 (d)	63 (d)	64 (a)	65 (c)	66 (c)
67 (c)	68 (d)	69 (a)	70 (c)	71 (b)	72 (d)	73 (d)	74 (b)
75 (d)	76 (b)	77 (c)	78 (d)	79 (a)	80 (a)	81 (e)	82 (b)
83 (a)	84 (d)	85 (d)	86 (c)	87 (b)	88 (c)	89 (d)	90 (c)
91 (d)	92 (e)	93 (d)	94 (b)	95 (d)	96 (b)	97 (b)	98 (c)
99 (b)	100 (c)						